

A

HOW TO PREPARE GUIDE

FOR THE

TRANSPORTATION MANAGER – (20483)

EXAMINATION

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I. INTRODUCTION

The purpose of this booklet is to help you prepare for the Transportation Manager (TM) examination. This booklet contains information about the TM examination.

This booklet was prepared to help you prepare to participate in the examination to become a TM. It is very important that you sit down in a quiet place and review the material in this book. You should also set aside time to practice doing the things that are suggested in this booklet to prepare for the examination. Please remember that the material in this booklet is designed to help you prepare for the exam. Therefore, you will not be allowed to carry this booklet or any other study material into the exam session. Later in this booklet, we will instruct you on what you are **allowed** to bring to the exam session and what you **must** bring to the exam session.

II. JOB ANALYSIS RESULTS

An analysis of the TM job in the Alabama Department of Transportation (ALDOT) indicated that a number of knowledges, skills, and abilities (KSAs) were important and needed from the moment a person becomes a TM and before he/she receives any training. Because it is not possible to measure all of these KSAs with an examination, not all will be measured.

When reviewing the KSAs statements listed in this booklet, the reader should note that the examples shown in the statement of how the KSA is used is not always intended to be completely inclusive. In other words, there may be questions on the exam which cover areas not directly mentioned as an example in the KSA.

III. EXAMINATION DESCRIPTION

In an attempt to provide an opportunity for each candidate to demonstrate his/her possession of the knowledges and abilities that will be measured, five separate exercises were developed. You will take each exercise separately.

The five exercises that comprise the TM examination are:

- Exercise 1: Research/Reading Comprehension
- Exercise 2: Math Skills
- Exercise 3: Plan Reading
- Exercise 4: Oral Communication
- Exercise 5: Problem Solving/Written Communication

A description of each exercise will follow in upcoming sections of this booklet.

IV. TEST SCHEDULING

If you are interested in applying for a TM position, you must **first file an application with the State Personnel Department.** It is the applicant's responsibility to ensure the application arrives at State Personnel. Tests are given periodically throughout the year. Do not wait for an official announcement from State Personnel or ALDOT about test dates or application cutoff dates. Instead, if you are interested in applying and believe you meet the stated minimum qualifications, you should submit an application immediately.

Once your application is received, it will be reviewed to ensure you have the minimum qualifications required to qualify for the job. If you meet the minimum qualifications, you will be sent a scheduling letter that will contain the examination dates, times, and location. You will need to call the number indicated on the scheduling letter in order to be scheduled for the TM exam.

V. PREPARING FOR THE EXAMINATION

Here are some suggestions regarding what to do before the exam and the items to take to the exam.

- Be well rested. Get a good night's sleep for several nights in a row before the exam.
- Allow plenty of time to get to the exam. If you are rushed and running late, you will be upset when you arrive. Plan to arrive at the scheduled time for check-in. If you are late, you will **NOT** be admitted to the examination site.
- Come to the exam dressed comfortably. You will be there for approximately six hours.
- Do not bring this booklet to the exam location. You will not be permitted to bring it into the testing site.
- Do not bring any of your study materials to the exam. This includes notes and any resources that you may have used to prepare for the exam.
- You should read and study this booklet. You should practice the kinds of things that this booklet suggests that you practice.
- The State Personnel Department will mail you a SCHEDULING LETTER identifying the dates the examination will be given and a phone number to call to schedule your examination time. All tests will be given in Montgomery at the State Personnel Department/ALDOT Testing Facility located at 3738 Atlanta Highway. You **MUST** call the number provided on the scheduling letter **PRIOR TO THE DEADLINE** indicated on the scheduling letter in order to be allowed to take the examination.
- Approximately 5 to 7 days prior to the exam, the State Personnel Department will mail you a CONFIRMATION POSTCARD identifying the date, time, and location that you have scheduled to take the examination. You **must** bring this CONFIRMATION POSTCARD with you to the exam site.
- You **must** also bring a PICTURE IDENTIFICATION to the exam location. This picture identification may be a valid driver's license, a military identification card, or a passport. You only need to have one form of PICTURE IDENTIFICATION. You will **not be allowed** to enter the exam location, nor take the TM exam without your PICTURE IDENTIFICATION.
- During registration, you will be asked to verify the last four digits of your social security number. You should also remember the Confirmation Number you were given when you called to schedule the exam.
- If you want to keep track of time during the examination, you should bring a watch or a small clock to the exam.
- Do not bring your own calculator. You will be provided with a small solar powered or battery operated calculator that performs basic functions such as addition, subtraction, multiplication, division, and percentages.
- You will be provided with pencils.
- Do not bring cell phones, two-way radios, or any other noise producing devices with you to the test room. If you do bring a cell phone or two-way radio, you will not be allowed to keep it during the exam.

VI. DURING THE EXAMINATION

General Guidelines

We are now going to review some very specific guidelines that you will be expected to follow when you come to take the TM examination.

- You must not leave your seat while the exam is being given (except to use the restroom). There will be exam monitors in the room in which you are being tested. They will be available to assist you if you have any problems. They will not provide any information related to the examination questions. If you do leave your seat, even to use the rest room, you **will not** be provided with any additional examination time. Be sure to use the restroom before the exam starts.
- Exam monitors will not interpret exam questions for you.
- You are not allowed to open any exam booklets nor begin working on the exam until you are instructed to do so.
- You may not refer to any outside materials during the exam.
- You are not allowed to talk during the exam. Candidates making any disturbances or caught cheating will be disqualified from the exam.
- For most of the exercises, you will be asked to write in your answers in an exam booklet. If you have to erase an answer, do so completely. You must also write legibly so that test raters can properly evaluate your answers.
- All needed materials (e.g., pencil, calculator) will be provided.
- As indicated above, the TM examination is made up of five separate exercises. You will take all five exercises on the same day.
- It is important to remember that the TM job covers a wide variety of duties and responsibilities within the Department of Transportation. The test was designed to reflect that diversity without overly targeting a particular area. Candidates placed on the register for TM can be considered for any available TM job in any area of ALDOT. While it is impractical to create a test which measures every aspect of every TM job, it was the goal of this examination development project to develop a test that will measure important and necessary-at-entry aspects of a *majority* of the TM jobs.

VII. EXERCISE DESCRIPTIONS

Exercise One: Research/Reading Comprehension Exercise

To test your ability to read and comprehend, you will be given a passage to read. You will then be asked to answer questions based on the information in that passage. There will be a total of 17 fill-in-the-blank questions; there will be no multiple-choice questions. Your answers will be written in the blank lines provided in the examination booklet. You will have one hour to complete this exercise.

The Research/Reading Comprehension Exercise was written to measure these targeted abilities:

A1 - Ability to gather information by contacting others, consulting manuals, and/or conducting any other research necessary.

A12 - Ability to read and understand technical information such as engineering journal articles, contracts, agreements, etc.

A15 - Ability to analyze and interpret numerical/statistical information, charts, and/or tables to draw conclusions.

A21 - Ability to read, comprehend, and apply information from technical manuals such as Construction Manual, Roadway Inventory Manual, Testing Manual, ASTM guidelines, MUTCD, AASHTO guidelines, Highway Safety Manual, and/or department specifications.

A22 - Ability to use ALDOT and other manuals to include where to look for information and how to apply this information when solving work problems.

A28 - Ability to read and understand specifications contained in technical manuals such as ALDOT Testing Manual, Standard Highway Specifications Manual, Construction Manual, Special Provisions and or supplemental agreements.

During the job analysis, these six abilities were shown to be important and necessary upon entry into a majority of the TM jobs.

Here is an example of the type of questions contained on the Research/Reading Comprehension Exercise:

- For daytime work, the flagger's vest, shirt, or jacket shall either be orange, yellow, yellow-green, or a fluorescent version of these colors. For nighttime work, similar outside garments shall be retro reflective. The retro reflective material shall either be orange, yellow, white, silver, yellow-green, or a fluorescent version of these colors, and shall be visible at a minimal distance of 300 m (1,000 ft.). The retro reflective clothing shall be designed to clearly identify the wearer as a person. When uniformed law enforcement officers are used, high-visibility clothing as described above should be worn.

Question:

- A local police officer, who is in uniform, is helping a road crew by providing traffic control to help with the morning rush hour. Should this officer be required to wear a vest or some type of high-visibility clothing while directing traffic?

The answer is: YES

Exercise Two: Math Skills Exercise

The Math Skills Exercise will consist of 25 word problem type questions. You will have one hour to complete the 25 questions. You will be given a Math Skills Exercise test booklet in which you will write your answers. The questions will not be multiple-choice. Instead, you will write your answers in the blank lines provided in the examination booklet. You will be provided with scratch paper to use while making your calculations. However, you must write

your answers in the answer booklet. You will be provided with a calculator.

The Math Skills Exercise was written to measure these targeted knowledges and abilities:

A16 - Ability to perform engineering calculations such as materials calculations, and/or hydraulics equations.

K15 - Knowledge of geometry to include calculation of elevation, angles, and curves.

K52 - Knowledge of algebra to include equations and their use.

K54 - Knowledge of basic math such as adding, subtracting, multiplying, dividing, percentages, and fractions.

K55 - Knowledge of geometry to include equations and their use such as areas, curve diameters, and/or angles.

K56 - Knowledge of trigonometry to include sine, cosine, tangent, and cotangent.

During the job analysis, these five knowledges and one ability were shown to be important and necessary upon entry into a majority of the TM jobs.

The remainder of this section gives various examples of questions and formulas you will need during the Math Skills Exercise. For some of these sample questions, an explanation is given as to why the answer is correct. When you are taking the actual test you will not be asked to provide an explanation. You will only be asked to provide your answer.

Here is a list of formulas you will need to solve the problems in the Math Skills Exercise. **These formulas will be provided during the exam.** However, you will need to know how and when to apply them.

1. Area = length x width
2. Volume = length x width x height
3. Volume of a cylinder = $(3.14) \text{ radius}^2 \times \text{height}$
4. Cubic yards = cubic feet divided by 27
5. Slope Ratio = run divided by rise
6. You will be provided with the right triangle information shown in this booklet. You will also be provided with the following formulas:
 - a. Tangent = opposite divided by adjacent
 - b. Sine = opposite divided by hypotenuse
 - c. Cosine = adjacent divided by hypotenuse
7. To calculate percentages, divide the partial number by the number which equals the whole. For example, if you want to know what percentage four is of eight. You would do the following:

4 divided by 8 = .5 or 50%. Therefore, four is 50% of eight.
8. You also need to be able to solve for X, the unknown number, in basic algebra problems.

To perform well on the Math Skills Exercise, you will need to be familiar with the types of information in the sample items shown below. Sample items shown in this booklet are not meant to be all-inclusive. The actual questions will differ from those given and may involve additional steps to obtain the answer. In order to do well on this exercise, you must be able to solve these types of problems.

Sample Item 1:

Use this formula to answer the following question:

- Solve for AB where:

$$AB = (E \times F) + G$$

Where:

$$E=6 \quad F=7 \quad G=8$$

$$AB = (6 \times 7) + 8$$

$$AB = 42 + 8$$

$$AB = 50 \quad \text{The answer is 50}$$

Sample Item 2:

You will need to be able to calculate area and volume. You may then be asked to convert to another unit of measurement.

- A parcel of land is 100 feet by 200 feet. How many acres is this parcel? (Note: one acre is 43,560 square feet)

$$\text{Area} = \text{Length} \times \text{Width}$$

$$= 100 \text{ ft} \times 200 \text{ ft} = 20,000 \text{ ft}^2$$

$$= 20,000 \text{ ft}^2 \text{ divided by } 43,560 \text{ ft}^2 = .46 \text{ acres. The answer is .46 acres.}$$

You may also be asked to calculate the volume of a cylinder.

- A concrete cylinder has a radius of 12 inches and a height of 2 feet. What is the volume of the cylinder in cubic yards?

$$\text{Volume of a cylinder} = (3.14) \text{ radius}^2 \times \text{height}$$

To convert feet³ to yards³, divide feet³ by 27

$$= (3.14) 12^2 \times 2 \text{ ft.}$$

$$= 3.14 \times 2 \text{ ft}^3$$

$$= 6.28 \text{ ft}^3$$

$$= 6.28 \text{ ft}^3 \text{ divided by } 27$$

$$= .23 \text{ yards}^3$$

The answer is .23 yards³

Sample Item 3:

You will need to be able to calculate slope ratios and determine if a slope ratio is within plan specification.

- On a certain project, the shoulder slope drops 12 inches over a 2 foot distance. What is the slope ratio for this shoulder?

Slope Ratio = Run divided by Rise

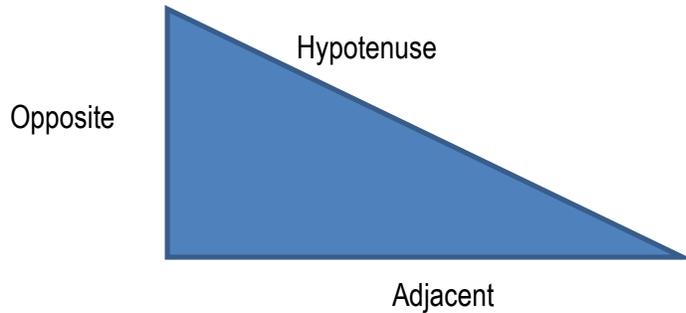
= 2 divided by 1

= 2 or a slope of 2:1 **2:1 is the answer**

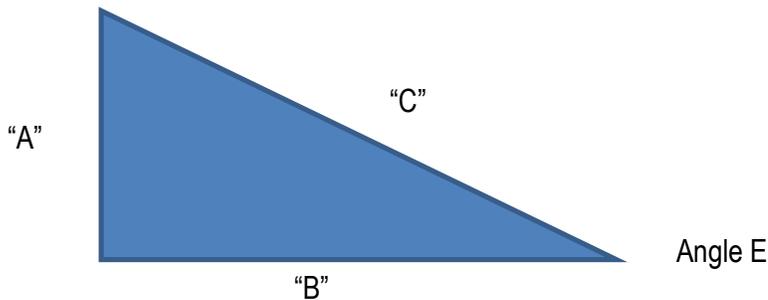
- In the project described above, the plans call for a slope no greater than 3:1. Is this slope within plan specifications? The answer is no, this slope is not within specifications. The lower the numerator in a slope ratio (i.e. the 2 and the 3) the steeper the slope. Therefore, a slope of 2:1 is steeper or greater than a slope of 3:1.

Sample Item 4:

You will need to be able to calculate the lengths of the sides of right triangles using sines, cosines, and tangents. These problems will also involve knowledge of basic algebra. You will need to be familiar with this diagram in order to solve these problems.



- In the diagram below, what is the length of "B" where "A" equals 10 and angle "E" equals 30 degrees? Assume this is a right triangle. (The tangent of 30 = .577)



Tangent = Opposite divided by Adjacent

$$.577 = 10 \text{ divided by } X$$

$$X = 10 \text{ divided by } .577$$

$$X = 17.33 \quad \text{Side B} = 17.33 \quad \text{The answer is 17.33}$$

Sample Item 5:

Other problems will involve the calculation of percentages and other types of calculations. Here are some examples:

A 12 acre plot requires fertilizer at a rate of 1,500 pounds per acre. How much fertilizer is needed?

$$12 \times 1,500 = 18,000 \text{ pounds} \quad \text{The answer is 18,000 pounds}$$

- A soil sample is determined to be 12 parts coarse aggregate and 30 parts non-coarse aggregate. What percentage of the sample is coarse aggregate?

12 divided by 42 = .29 or 29% **The answer is 29% of the sample is coarse aggregate**

When you are taking the actual test, **you should read each question carefully** before answering. The test questions are not intended to be tricky or confusing. Instead, they are intended to simulate the type of problems encountered by TMs on the job.

Exercise Three: Plan Reading Exercise

The Plan Reading Exercise will consist of 19 questions and you will have 40 minutes to complete the 19 questions. You will be given a Plan Reading Exercise test booklet in which you will write your answers. The questions will not be multiple-choice. Instead, you will be given the questions and provided with a blank line in which you will write your answer. You will also be given sheets from a roadway plan set which you will use to answer the questions. You will also be provided with a calculator.

The Plan Reading Exercise was specifically written to measure these targeted knowledges and abilities:

A2 - Ability to interpret technical information and apply to tasks such as using formulas to calculate information such as taper length.

A13 - Ability to read and understand construction plans.

A18 - Ability to read and interpret design plans to include distance measuring units, utility layouts, box sheets, cross sections, standard drawings, and/or quantities.

A19 - Ability to apply plans to real-life situations such as showing how plans will impact property.

K19 - Knowledge of roadway designs such as slopes, grades, vertical and horizontal alignments, and/or curvatures.

K21 - Knowledge of construction procedures and practices such as traffic control, erosion and sediment control, construction sequencing, and/or road and bridge building methods/practices.

K57 - Knowledge of the uses and capabilities of erosion and sediment control materials such as silt fences, wattles, rip rap, rolled erosion control products, and grassing.

During the job analysis, these three knowledges and four abilities were shown to be important and necessary upon entry into a majority of the TM jobs. The remainder of this section outlines the things you will need to know in order to do well on the Plan Reading Exercise.

- You will need to be familiar with information contained on a plan set's title sheet.
- You will need to be able to locate specific pay items and quantities contained in the summary of quantities sheets.

- You will need to be able to locate items and specifications shown on the typical sheet.
- You need to be able to locate information shown on the erosion and sediment control legend and erosion control plans sheet.
- You will need to be familiar the information contained on the pavement lay out and striping sheet.

Exercise Four: Oral Communication Exercise

During this exercise, candidates will be seated in a room which will serve as their “office” for this portion of the exam. Each candidate will be seated in a separate room and will be assisted by a test monitor. You will be given a Candidate Background Information Booklet that fully describes a hypothetical job-related situation. You will have a 20-minute preparation period to review the Candidate Background Information and to prepare the required presentation.

Once the preparation time has ended, two role players will enter the room. These role players will assume a role, which is described in the scenario. You will then make your presentation to the role players and take questions. You will be given a maximum of 15 minutes to deliver your presentation and a maximum of 15 minutes to answer the role players’ questions.

Your performance will be video and audio taped so that an exact record of your performance exists and scoring can be done at a later date.

The Oral Communication Exercise was specifically written to measure the following targeted abilities:

A73 - Ability to communicate orally by expressing yourself well such as speaking clearly and articulating information.

A76 - Ability to adapt and/or adjust the way you communicate with others based on backgrounds, education, and the experience of the person you are communicating with.

A89 - Ability to diffuse a hostile or volatile situation by letting people fully express themselves and not taking things personally.

A90 - Ability to remain calm and maintain a professional demeanor in emotional, stressful situations.

A91- Ability to receive criticisms of one’s views and decisions without arousing emotion in self or others.

A92 - Ability to communicate negative information to others in a sensitive way that addresses their needs and concerns.

A94 - Ability to say “no” to the public by showing the rationale, providing explanations, and/or discussing alternatives.

A95 - Ability to check facts and investigate political concerns/implications when saying “no” to the public.

Exercise Five: Problem Solving/Written Communication Exercise

During the Problem Solving/Written Communication Exercise, you will assume the role of a recently promoted TM. Your assignment will be to schedule employees and resources as needed to accomplish the assigned tasks. You also have to make several administrative and supervisory decisions such as prioritizing projects, moving equipment and resources to various projects as needed to accomplish the job, and making decisions concerning employee issues and performance problems. During the Problem Solving portion of this exercise, a test monitor will be in the test room with you in order to pass out and collect your information at the appropriate times.

At the end of the Problem Solving portion of the exercise, you will be asked to write a memorandum to your supervisor. You will be given instructions about the content of this memo during the exercise. The memo will be scored for both content and grammatical construction. You must write legibly so that what you write can be scored, and you must use a proper memorandum format. The test monitor will leave the test room when you begin writing your memo.

You will be allowed two hours to complete both the Problem Solving portion and to write the memo.

The Problem Solving/Written Communication Exercise was specifically written to measure these targeted abilities:

A3 - Ability to identify problems and their cause and potential options/solutions to these problems.

A4 - Ability to present pros and cons of alternatives and recommend solutions.

A8 - Ability to make decisions in a timely and prompt manner.

A31 - Ability to manage one's own time efficiently.

A35- Ability to prioritize employee's schedules based on input and immediate needs (i.e. floods, snow removal, hurricanes, supervisor's needs, department objectives, and priorities).

A52 - Ability to assess the progress of subordinates' work as needed to meet deadlines and ensure work is completed in a timely manner.

A53 - Ability to evaluate the quality of subordinates'/consultants' work.

A60 - Ability to hold people accountable for work activities and job performance.

A63 - Ability to obtain necessary resources for subordinates to accomplish their work.

A66 -Ability to identify needed training for employees by using personal observation, counseling/ performance appraisal meetings, and/or conducting surveys.

A71 - Ability to write clearly and concisely.

A72 - Ability to use appropriate grammar in written communication.

VIII. HOW TO STUDY FOR THE TM EXAMINATION

You should study whatever material you believe will assist you in gaining or improving the KSAs listed in each section and in the example material you read in each section. If you are unable to solve or find the correct answer for any of the sample test questions listed in this booklet, you are encouraged to find other resources or reference material that can help you prepare for this exam. If you are unfamiliar with the types of plan sheets described, you should locate the sheets and ask someone to explain the information contained on them to you. You should practice speaking before small groups, and practice writing letters and memorandums. Have someone critique you as you speak or write. You also need to be proficient in the areas of math described in this booklet. You should note that the examples given demonstrate the concepts you will need to understand. They are not meant to detail every type of problem you will encounter on the exam. You should also review reading passages and have someone ask you questions from them.

Some specific ways to study for the exam are given below.

- Set aside certain times when you will be able to study/practice.
- When you do study, keep your mind on what you are doing. Do not try to read where it is noisy or when you are doing something else like watching a child or the television.
- Study or practice frequently in order to ensure that you understand the material completely. Some hints for doing this are:
 - ⇒ Ask someone to quiz you.
 - ⇒ Make up questions for yourself and then answer them. Be sure to check that the answers are correct.
 - ⇒ Have someone else review your answers.
- The more you practice the better off you will be. Practicing all at once right before the exam does not work well. You should space your practice over all the time you have until you take the exam.

We have presented these study guidelines to help you prepare to take the TM Qualifying Examination. The more you prepare by reading, studying, and practicing, the better you should do.

IX. WHAT TO BRING TO THE TM EXAMINATION

Allow plenty of time to get to the examination site. Plan to get there at least 15 minutes before the exam is scheduled to begin.

Bring your PICTURE IDENTIFICATION and CONFIRMATION POSTCARD when you come to take the exam. Examples of accepted picture IDs are a valid driver's license, a military identification card, or a student identification card.

Bring a wristwatch or small clock if you want to keep track of time. Please turn off any alarm before you get to the testing facility.

Do not bring your own calculator. Calculators will be provided at the testing facility.

You will be provided with pencils so you do not need to bring pencils or pens with you.

Do not bring any personal notes or study material that you used to prepare for the exam.

Do not bring cell phones, two-way radios, or any other noise producing devices with you to the examination. You will not be allowed to use them.

Do not bring children or any other visitors to the exam. They will not be admitted to the test site.

X. ADMINISTRATION INFORMATION

Administration Contact

The contact for the TM examination administration is Bill Summerlin at (334)242-3389.

Reasonable Accommodation

If you would like to request special testing accommodations or have any questions concerning the examination site or examination conditions, please contact us at the phone number above.

Administrative Questions

You may contact us if you have any administrative questions or concerns about information presented in this booklet. Exam administrators are not allowed to divulge specific information about the content of the exam.

Test Results

It is not necessary for you to contact us in order to receive your grade; you should receive notification of your score on the exam by postcard when it is available.

Once the register is established, you may obtain your standing on the register online at www.personnel.alabama.gov. From the homepage, you should click on “Applicants” and then “Register Standings”, and follow the instructions. For security purposes, you must create an online profile in order to access your standings.

Reminders

It is the applicant’s responsibility to ensure their application arrives at State Personnel. Tests are given periodically throughout the year and there are deadlines for the receipt of applications for each test. If you would like to know the deadline for a particular test, please call State Personnel. State Personnel does not announce these deadlines in any information sent out to departments so you should not wait for an official announcement from State Personnel or ALDOT about test dates or application cutoff dates. Instead, if you are interested in applying, you should do so as soon as you believe you meet the stated minimum qualifications.

You will not need OR be allowed to bring anything to the exam other than the items previously mentioned.

If you are unable to schedule for this examination or fail to appear at the examination on your scheduled day and time, you will need to submit a new application to State Personnel in order to be scheduled for future administrations.

THIS CONCLUDES THE INSTRUCTIONS AND NOTES ON “HOW TO PREPARE” AND TAKE THE TRANSPORTATION MANAGER EXAMINATION.